

TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT EFFLUENT CAPTURE

Identification No.: RL-DD025-S

Date: November, 2001

Program: Environmental Restoration

OPS Office/Site: Richland Operations Office/Hanford Site

PBS No.: RL-CP01

Waste Stream: LLW Debris (ER-05, risk = 4), MLLW Debris (ER-02, risk = 4), and TRU debris (T3-ER, risk = 5)

TSD Title: N/A

Operable Unit (if applicable): N/A

Waste Management Unit (if applicable): N/A

Facility: 233-S, Materials processing facilities (five processing canyons)

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" Priority: Select a "1", "2" or "3" to assess the impact of the need/opportunity relative to the current site baseline.

- ☐ 1. Critical to the success of the ACPC
- ☒ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
- ☐ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Effluent Capture

Need/Opportunity Category: Science Need

Need Description:

Smoke from cutting tools needs to be captured in a safe and efficient manner to maximize clarity in the cutting area and to minimize secondary contamination.

An understanding is needed of the particle sizes associated with the smoke from alternative cutting methods (e.g., laser cutting, plasma torch, gasoline torch). As the particle size may vary with the material being cut, various metals (e.g., stainless steel and coated and uncoated carbon steel) may need to be tested for a full understanding of the particles sizes.

Schedule Requirements:

Earliest Date Required: 10/1/2001

Latest Date Required: 12/31/2004

Problem Description:

Different cutting tools generate smoke and particles of different particle sizes. These smoke and particles have been known to foul High Efficiency Particulate (HEPA) filters very quickly resulting in the need to replace the HEPA filters. Some work-arounds have been used, such as electrostatic precipitators and mini-cyclones. A better understanding of the particle size associated with the smoke from different cutting techniques would allow for the optimal capture technology to be employed.

Potential Life-Cycle Cost Savings of Need (in \$000s) and Cost Savings Explanation: Rough order of magnitude (ROM) life cycle cost (LCC) savings of \$200K. LCC savings estimate is based on the assumption that pipe cutting technologies would reduce the FY2002 and FY2003 costs by 2%. The FY2002/2003 Project cost of \$10.7M was assumed based on DOR/RL-97-44, Volume 5, Revision3, September 2000. If no additional methods are found, then additional confinements will have to be designed and constructed causing delays and unplanned expense.

Benefit to the Project Baseline of Filling Need:

A better understanding of the particle sizes associated with the smoke from various cutting techniques would allow for optimal capture technologies to be used. This would reduce worker exposure, reduce cost, and reduce secondary contamination.

This Science Need also supports the following Hanford Technology Needs: RL-DD030, RL-DD048, RL-DD062

✗ Cost Savings ✗ Risk Reduction Enabling Knowledge

Relevant PBS Milestone: PBS-MC-030 and PBS-MC-031

End-User: Environmental Restoration Contractor

Contractor Facility/Project Manager:

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